

Claims

1. Device (5) for measuring capacitance with an electrode arrangement consisting of a plurality of electrodes (E1, E2, ..., En) which are located next to one another and/or in succession on a support (6), the actual measurement means (8) for measuring the capacitance between a first electrode (E2) as the measurement electrode and a second electrode (E1) as the counterelectrode, and a controllable switching means (7) for connection of the electrodes (E1, E2, ..., En) as the first and second electrodes (E2, E1) to the measurement means (8), which connection can be switched in a definable manner, **characterized in that** controlled by the switching means (7) each electrode (E1, E2, ..., En) of the electrode arrangement can be switched in alternation as the measurement electrode and at least one of the other electrodes (E1, E2, ..., En) can thereby be switched as the counterelectrode to a definable reference potential.
2. The device (5) as claimed in claim 1, wherein the definable reference potential is the ground potential of the measurement means (8).
3. The device (5) as claimed in claim 1 or 2, wherein all electrodes (E1, E2, ..., En) which are not switched as the measurement electrode are switched as the counterelectrode and are switched to the reference potential.
4. The device (5) as claimed in one of claims 1 to 3, wherein all electrodes (E1, E2, ..., En) have an essentially identical contour and surface area.

5. The device (5) as claimed in one of claims 1 to 4, wherein all electrodes (E1, E2, ..., EN) are arranged essentially equidistantly.
6. The device (5) as claimed in one of claims 1 to 5, wherein several electrodes which are preferably not directly adjacent (E1', E1"; E2', E2"; ...; En', En") are interconnected hard-wired into one respective electrode group, and wherein controlled by the switching device (7) each electrode group can be switched in alternation as the measurement electrode and at least one of the other electrode groups can thereby be switched as the counterelectrode to a definable reference potential.
7. The device (5) as claimed in one of claims 1 to 6, wherein the electrodes (E1, E2, ..., En) together with the connecting printed conductors (14) are applied to the support (6) in thin or thick film technology.
8. The device (5) as claimed in one of claims 1 to 7, wherein the device (5) has a connecting means (17) for connection of other sensors (15) and/or for connection to the switching means (7).
9. The device (5) as claimed in one of claims 1 to 8, wherein the controllable switching means 7, the measurement means 8 and preferably also a downstream evaluation means 9 are integrated in a microcontroller or microprocessor.
10. Process for capacitance measurement with an electrode arrangement consisting of a plurality of electrodes (E1, E2, ..., En) which are located next to one another and/or in succession on a support (6), the actual measurement means (8) for measuring the capacitance between a first electrode (E2) as the measurement electrode and a second electrode (E1) as the counterelectrode, and a controllable switching means (7) by means of which the electrodes

(E1, E2, ..., En) are connected as the first and second electrodes (E2, E1) to the measurement means (8) in a manner which can be switched in a definable way, **characterized in that** controlled by the switching means (7) each electrode (E1, E2, ..., En) of the electrode arrangement is switched in alternation as the measurement electrode and at least one of the other electrodes (E1, E2, ..., En) is thereby switched as the counterelectrode to a definable reference potential.

11. The process as claimed in claim 10, wherein the switching means is controlled by a microprocessor according to a stored control program.
12. Means (1) for determining the level (2) of a liquid (3) in a container (4) with a device (5) as claimed in one of claims 1 to 9 and an evaluation means (9) which is downstream of the actual measurement means (8) and which determines the level (2) from the capacitance measured by the device (5) by comparison to stored reference values.
13. The means (1) as claimed in claim 12, wherein the liquid (3) and/or at least parts of a wall of the container (4) are also switched to the reference potential.
14. The means (1) as claimed in claim 12 or 13, wherein in the device (5) for measuring capacitance several electrodes (E1', E1'', ..., E5', E5'') which are preferably not directly adjacent are interconnected hard-wired into one respective electrode group and wherein controlled by the switching device (7) each electrode group can be switched in alternation as the measurement electrode and at least one of the other electrode groups can thereby be switched as the counterelectrode to a definable reference potential.
15. The means (1) as claimed in one of claims 12 to 14, wherein interconnection of the electrode groups takes place both with respect to the number of electrodes combined in one group and

also with respect to the relative position of the electrodes combined in one group relative to the entire electrode arrangement such that the assignment of the measured capacitance value, which is to be undertaken by the means (1) for determining the level (2), to a resulting level (2) is unambiguous.

16. The means (1) as claimed in one of claims 12 to 15, wherein the electrodes are located on the inner side of a tube (16) which can be immersed into the liquid.
17. The means (1) as claimed in claim 16, wherein the tube (16) on its side facing the liquid has a coating at least partially, preferably over the entire surface area.